

CLAIMS

1. Device (V) for controlling and/or monitoring a yarn processing system (S), comprising a textile machine (M) like a weaving machine or a knitting machine having an electronic main control (MCU), and at least one yarn feeding device (F₁ to F_n) having an electronic feeding device control (FC), a serial communication field bus system (FBS) within which as communication participants at least the feeding device control (FC) and the main control (MCU) communicate via at least one field bus (FB), **characterised in that** between the textile machine (M) and at least a yarn feeding device (F₁ to F_n) for a real time transmission of time critical and/or time specific digital and anonymous event signals (ES) for executing and/or confirming different time critical and/or time specific events within the yarn processing system is provided, and that the respective event signal (ES) already is defined prior to the transmission for at least one communication participant via the field bus system (FBS) by at least one event specific characteristic.
2. Device as in claim 1, **characterised in that** an individual point-to-point-event line (EL) is provided between the textile machine (M) and at least each yarn feeding device (F₁ to F_n), preferably containing an event signal driver (ELD) per event line.
3. Device as in claim 1, **characterised in that** a single and common multi-drop event line (EL) is provided between the textile machine (M) and at least the yarn feeding devices (F₁ to F_n), preferably containing at least one common event signal driver (ELD).
4. Device as in claim 1, **characterised in that** at least one accessory device (E, D, B, G) is associated to at least one yarn feeding device (F₁ to F_n) which accessory device can be controlled and/or monitored by the feeding device control (FC), and that the accessory device is connected to the event line (EL) directly or via the feeding device control.
5. Device as in claim 1, **characterised in that** at least one accessory device (H) is associated to at least one yarn feeding device (F₁ to F_n) which accessory device has an electronic accessory device control and/or accessory device monitor (AC), and that the accessory device is connected to the event line (EL) and, in some

cases, to the field bus system (FBS), either directly or via the feeding device control (FC).

6. Device as in claim 1, **characterised in that** at least one accessory device (A, K, H) is associated to the textile machine (M) and that the accessory device can be controlled or monitored by the main control (MCU) or by an individual electronic accessory device control (AC), and that the accessory device is directly connected to the event line (EL).
7. Device as in claim 1, **characterised in that** the event signal (ES) is at least one signal pulse.
8. Device as in claim 1, **characterised in that** the communication participants are connected to addressed nodes of the field bus system (FBS), or are provided with addresses within the field bus system, respectively.
9. Device as in claim 1, **characterised in that** the event specific characteristic of the event signal (ES) is defined in each communication direction in the field bus system (FBS) for each transmission direction in the event line (EL).
10. Device as in claim 1, **characterised in that** the event specific characteristic comprises:

the type of the event represented by the event signal and/or

the address and/or node address of at least one sender and/or receiver of the event signal, and/or

the expected point in time of the event and/or a time window for the at least one event, and/or

the number of expected events at one or at several nodes, and/or

a delay time duration which has to be considered between the transmission of the event signal and the execution and/or confirmation of the event, and/or

the consequence of the event signal which is transmitted from or to a predefined address and/or at a predefined point in time and/or within a predefined time window, and the like.

11. Device as in claim 1, **characterised in that** the event signal (ES) is representing at least one of the following signal types:

an activating or deactivating trig signal for a yarn feeding device stopping accessory device (D),

a yarn winding count signal of a yarn feeding device count accessory device (B),

a trig signal for activating or deactivating yarn stretching accessory device (G) arranged at the exit side of the yarn feeding device,

a trig signal for activating, deactivating or adjusting a controllable yarn braking accessory device (H) arranged within the yarn path,

an okay signal and/or fault signal of a weft yarn monitoring or yarn breakage detector accessory device (E, K) arranged within the yarn path,

an event confirmation signal,

an event inhibition signal,

an okay status signal and/or a fault status signal of at least one communication participant, and the like.

12. Method for controlling and/or monitoring a yarn processing system (S) comprising a textile machine (M) like a weaving machine or a knitting machine having an electronic main control (MCU), and at least one yarn feeding device (F1 to Fn) having an electronic feeding device control (FC), and a serial communication field bus system (FBS) including at least one field bus (FB) in which field bus system at least the feeding device control (FC) and the main control (MCU) are communicating as participants, whereby according to the method the connected communication participants communicate within the field bus system (FBS) by

messages such that time critical and/or time specific, prioritised events are executed and/or confirmed as functions of the yarn processing by at least one selected communication participant, **characterised in that** the execution and/or confirmation of the execution of the respective event is made by at least one anonymous real time event signal (ES) transmitted via at least one event line (EL) which is separated from the field bus system (FBS), and that at least one event specific characteristic which informs at least one communication participant about the meaning of the expected event signal (ES) is defined for this communication participant in advance to the transmission of the event signal (ES) in the event line (EL) via the field bus system (FBS) and by software by at least one message (NES) representing the characteristic.

13. Method as in claim 12, **characterised in that** at least one event is defined by an expected point in time or by a time window or by a time duration, and in some cases, by at least one sender address.
14. Device for communicating in and for controlling a yarn processing system (S) including a textile machine (M), e.g. a weaving machine, and one or several associated yarn feeding devices (F1 to Fn), e.g. weft yarn feeding devices, the textile machine and/or the feeding devices having associated accessory assembly like e.g. control for uncontrolled yarn stretchers or brakes, yarn sensors, etc., the textile machine comprising a main control (MCU) and each yarn feeding device comprising an individual feeding device control which, in some cases, also is provided for the accessory assemblies of the feeding device, further including a serial communication field bus system (FBS) which is provided with one or several parallel bus lines (FB), via which field bus system at least the respective feeding device controls of the yarn feeding devices are connected to the main control of the textile machine, **characterised in that** separate from the field bus system (FBS) one or several specific event synchronous lines (EL) are provided as functions for bidirectional digital signal transmissions between the textile machine (M) and the yarn feeding devices (F1 to Fn) and vice versa for messages of time critical or time specific characters, so-called event synchronous signals, whereby the event synchronous signals, e.g. trig signals for initiating or executing certain functions, predefined feedback pulses, e.g. for confirming the initiated or executed functions, or for indicating events occurring in the components, which are contained in the yarn processing system, etc..

15. Device as in claim 14, **characterised in that** the function of the at least one event synchronous line (EL) in relation to time, i.e. the intended function at a predefined point in time or within a predefined time period (time window) can be defined or configured, preferably on a continuous time basis, by means of information which is sent within the field bus system (FBS) interconnecting the textile machine and the yarn feeding devices and in some cases their accessory assemblies, whereby the intended function of the at least one event synchronous line (EL) may be information about the type of the next following event signal which will be sent in the at least one specific event line or which occurs within the event line, and/or and address information representing from which node or nodes of the yarn feeding device or the yarn feeding devices (F1 to Fn) or of the accessory assembly or the accessory assemblies the next following event is to be expected.